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BRITISH FISHERIES.—No. X.

THE SALMON.

[Salmon Spearing.]

THE family of the salmon and trout (*Salmonidæ*) is one of the most interesting classes of British fishes, but at present our attention will be confined to the common salmon (*Salmo salar*). The herring, the pilchard, or the mackerel, may be appropriated by any who please to direct their attention to their capture; but the case is different with regard to the salmon, the right of impropriation originating in its peculiar habits. The preservation of these rights has long been the object of legislative enactments, and an error on a point of natural history may be the means of rendering the protective law useless or oppressive. There has, therefore, been every stimulus which arises out of personal interest to study the most intimate habits of the salmon, and yet the facts which have been ascertained are weakened to such an extent by local differences, that legislation is still at fault upon the question of protection.

The great point of difference between the salmon and the fishes which have hitherto been noticed is, that while the latter reside exclusively in the ocean, the salmon is an inhabitant both of fresh and salt water. The salmon, as Izaak Walton truly says, is accounted the "king of fresh-water fish;" and with regard to its peculiar habit, it is quaintly remarked by the good old angler, that "he has, like some persons of honour and riches which have both their winter and summer residences, the fresh rivers for summer and the salt-water for winter, to spend his life in." The fish seems to undergo a periodical alteration which fits it for a change in the quality of its native element; and the manner in which its habits are thus adapted to the two extremes of fresh water and the water of the ocean, which is at once fatal to other fish, is a proof of the wonderful powers of modification which are exercised not only in man, but, in this instance, in the inferior objects of creation. A salt-water fish, which is not acted upon by this modifying power, if put into fresh water, would suffer as much as an animal partially deprived of air, its motions becoming agitated, its respiration affected, and death ensuing in a very short space of time. The same effects may be witnessed on placing a fresh-water fish in salt water. There have been attempts made, by rendering the change gradual, to adapt the constitution of fishes to a different quality of its proper element; but such experiments are curious rather than useful, and if they succeeded the fish would doubtless become deteriorated as an article of food. It is generally better to co-operate with nature than to thwart her plans.

The salmon is a northern fish, and is not found further south than in some of the rivers on the western coasts of France. In America it ascends the St. Law-

rence, and enters the tributary streams of Lake Ontario; but its progress within the United States is arrested by the Falls of the Niagara. Gesner, a naturalist of the early part of the sixteenth century, observed that "there was no better salmon than in England;" and Izaak Walton states, that "though some of our northern countries have as large and as fat as the river Thames, yet none are of so excellent a taste." Owing to the progress of population and the extension of manufactures, the salmon rivers in England are far less productive than formerly. A Thames salmon is now rarely seen, and the rivers of the north of England, as well as those of the west, though they have not declined to the same extent as the Thames, or the Avon in Hampshire, are not now of much commercial importance. The case is different in Scotland, the principal supply of salmon being derived from the Tay, the Tweed, the Dee, the Don, and most of the streams along the coast. The salmon rivers in Ireland are the Erne, the Moy, the Bann, the Blackwater, the Shannon, and nearly all the principal streams along the northern and western coasts.

In the summer salmon inhabit the sea or the mouths of rivers, which they ascend in autumn for the purpose of depositing their spawn. They do not return to the sea until the spring, after having completed this task. It has been ascertained by experiments that the ova of salmon will not become productive in *still* water. They must be deposited in a clear gravelly bed, where there is a strong running current; and towards the head of the stream, where the temperature of the water is least variable, is the best adapted for the purpose. The salmon will make extraordinary efforts to reach the upper portion of large rivers, or they will diverge in their course up its tributary streams, the female fish being the first to make the ascent. The migration does not take place immediately on the fish leaving the sea; but they advance up the river as far perhaps as the tide-way is felt, and when the ebb takes place, again descend to the mouth of the river. By thus remaining partly in salt and partly in fresh water they are probably better prepared for a long continuance in the latter. On first coming from the sea the salmon is infested with a parasitic animal, which it soon loses; and it has been thought that the annoyance which it experiences was the means of directing the fish into clear water, but its movements are doubtless caused by an instinctive feeling of much more importance, and this is the more likely as the *lerneæa salmonea* does not fasten itself upon the sensible parts. After long continuance in the river, the salmon is attacked by a species of maggot, of which it gets rid soon after it enters the sea; in the one case the fresh, and in the other the salt water being noxious to the *parasiti*. The precise period at which the salmon enters the river does not appear to depend entirely upon the state of the ova, for while some fish proceed far up the river, the roe of others is in so mature a state that they can advance but half way, and others are compelled to seek out a suitable place in the shallows nearer its mouth. The great majority, however, as they get full of roe, ascend beyond the tide-way, after a short continuance in the brackish water, and push on towards the sources of the stream, overcoming impediments which might be thought insurmountable. They will clear rapids or weirs which are eight or ten feet in height, and though at first baffled in their efforts, resume the attempt with surprising vigour. Sometimes they overshoot or mistake their mark and throw themselves upon dry land. Though they seldom spring out of the water more than ten feet, they have been known to descend a fall of the height of thirty feet; and to leap over a dry rock of considerable height and drop into the water on the other side. There is a fall on the Beauly, in Invernesshire, where, according to Mr. Mudie, in the 'British Naturalist,' the sight of a voluntarily cooked salmon has been witnessed. A kettle, it is said, was placed upon the flat rock on the south side of the fall, close by the edge of the water, and kept full and boiling until a salmon fell into the kettle and was cooked on the spot. This fall is said to be literally thronged with salmon endeavouring to pass higher up the river. It is an old opinion, and still very generally entertained, that previous to making a spring the fish curves its body and puts its tail in its mouth. Michael Drayton, in his 'Polyolbion,' alluding to a salmon-leap in the Tivy, has adopted this opinion:—

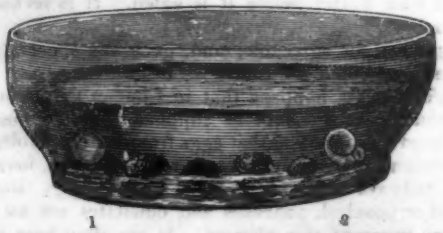
"Here, when the labouring fish does at the foot arrive,
And finds that by his strength he does but vainly strive;
His tail takes in his mouth, and bending like a bow
That 's to full compass drawn, aloft himself doth throw;
Then springing at his height, as doth a little wand,
That 's bended end to end, and started from man's hand,
Far off itself doth cast;—so does the salmon vault."

The fact, however, has been ascertained by observation, that salmon spring up nearly in a perpendicular line, and with a strong tremulous motion. When a pair of salmon have reached a favourable place in the shallow water, they proceed, generally in the morning or in the evening twilight, to make a furrow with their noses in the gravel, working against the stream; for if they moved in the opposite direction, the water would enter their gills and "drown" them. Into this furrow the spawn is deposited, the process occupying from eight to twelve days. The jaw of the male becomes hard, and grows like a horny substance, previous to the breeding season: it is thus enabled to form the spawning-bed, which is from eighteen to twenty inches deep in the hard gravel. Pennant says, that the tail is used to cover the ova with gravel, as after spawning it is observed to have no skin on that part. The fish afterwards retire to some neighbouring pool to recruit themselves. In a fortnight or three weeks afterwards the male fish descends the stream, the female being the last to leave, as it is the first to reach, the spawning-ground. The female fish sometimes does not depart until the ova are nearly hatched. They are from 17,000 to 20,000 in number, according to an experiment made by boiling the roe and counting as many as would fill a certain measure, the rest being subsequently estimated. For a short time, both before and after spawning, salmon are unfit for food, the change which they undergo at this period being a provision which is intended as a means of preserving the species; and a disregard of this significant alteration has diminished the numbers in many of the principal rivers. Before spawning, the colour of the male fish is orange or red, and the flesh of both male and female becomes hard and unpalatable: the male is then called a "red fish," and the female a "black fish," from its dark hue. After spawning, they continue for some time lean and out of condition, and are then termed "kipper," or "kelt-fish." The appearance of the salmon in a healthy state is too familiar to need description: its quality may be known by the colour of the flesh, which is of a delicate red. Sir Humphry Davy ascertained that the red colour of the *Salmonidæ* is owing to a peculiar coloured oil, which may be extracted by alcohol. The depth of the red colour and the quantity of curd are generally proportional. The salmon, while in their weak state, descend from pool to pool after spawning, and are at length carried to sea by the winter or early spring floods, before reaching which, however, they again remain some time in the brackish water.

Besides the regular effects of the seasons, the influence of the variations to which they are liable is often felt under circumstances which might be supposed almost beyond their reach. The vivification of the salmon would appear to depend solely on the return of

spring, when the effect of a warmer sun would be obstructed by no casualty; but this is not always the case. If, during the autumn and winter, the rivers are not swollen by floods, the spawn is deposited in its gravelly bed in safety; but the occurrence of floods occasion the salmon to ascend too high up the stream, and when they subside the ova are left dry. On the other hand, those beds which are in the most favourable situations may be covered by an accumulation of sand brought down by floods, and the fry cannot possibly make their escape; or the newly-disturbed gravel may be swept away by a slight fresh soon after the ova are deposited. Doubtless, instinct directs the fish to select a situation which is the least exposed to such mischances. It is said that if more pairs of salmon resort to one spawning-place than there is convenient room for, they will destroy each other's furrows, thus affording in fish a curious exemplification of a principle which seems to be in operation throughout the whole kingdom of Nature.

Experiments have been made at various times relative to the vivification of the ova of salmon, the most interesting of which are the two following:—The first is detailed by Dr. Knox, in the 'Transactions of the Royal Society of Edinburgh.' On the 2nd of November, he observed the ova of a salmon deposited in the usual manner near the sources of the Tweed. On the 25th of February, or a hundred and sixteen days afterwards, the ova were dug up and found to be unchanged. On the 23rd of March, twenty weeks from the period of their deposition, the ova were changing, the fry lying in the gravel, after having cast the outer shell. On the 1st of April the fry had quitted the spawning-bed by ascending through the gravel. The ova may be hatched artificially by being put into bottles of water



1 2

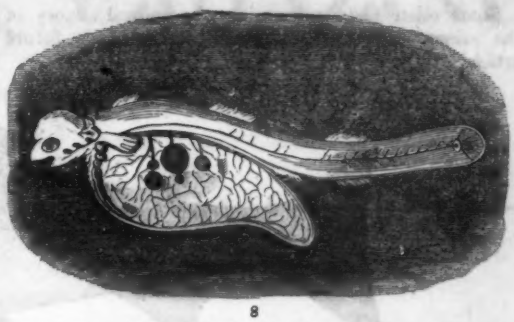
[1. The egg, pea, or spawn, of the natural size, after the vital principle has been developed. The body of the fish, in this stage, is of a pinkish tinge, and the size of the eyes highly disproportionate. 2. The shell of the ovum just burst, and the head of the fish protruding from it.]

3 4 5

[3. State of the ovum eight hours after the bursting of the shell, when the pulsations of the heart become visible. 4. The shell just thrown off; the tail drooping. About a third part of the shell, which is transparent, is fractured by the fish in its exertions to extricate itself. Before the shell is broken, the tail envelopes the yolk, which is seen attached to the body of the fish. 5. In a short time the tail becomes straight, and the fish more lively; the mouth assumes a distinct form, and the lower jaw and pectoral fins, which are quite transparent, are in motion and articulate with the motion of the heart, which beats from sixty to sixty-five times in a minute.]

6 7

[6. Magnified representation of No. 3; the fish adhering to the shell, which is only partially broken. 7. (No. 5 magnified). The heart is before the pectoral fins, under the throat. A day or two after the fish leaves the shell, the bag, which was at first round, becomes more and more elongated, and it appears to have an outer case; a transparent part, apparently empty, being seen at the end.]



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[8. A second magnified view of No. 5, showing the direction in which the blood circulates, as seen by a microscope. The blood flows from under the body of the fish through the blood-vessels, ramified along the sides of the back, and is then collected into the large vessel which runs along the front and bottom of the bag, communicating directly with the heart. An equal quantity of air, or some transparent matter, circulates with the blood. The blood is drawn by the heart from the large vessel alluded to, and thrown in regular pulsations into the vessels of the head and throat, where it assumes a darker colour. The rays of the gills are visible, and the fish soon becomes to assume a brownish colour.]

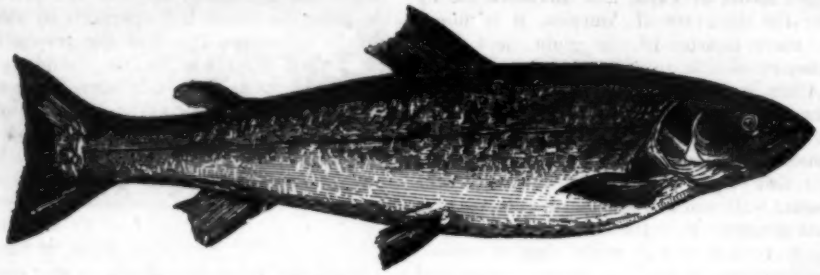
in warm rooms, but they cannot be preserved alive longer than ten days, during which they eat nothing. The other experiment was made by Mr. Hogarth, of Aberdeen, and is still more minute in its details than the former one; and it is also exemplified by engravings showing the progress of the spawn of salmon.

In the rivers and streams the ova become vivified during the months of March and April, according to the state of the season. By the end of May the water is full of the fry, from an inch in size, perfectly formed, to the size of a minnow. At first they keep in shallow water, but as their strength increases, they may be seen in the middle of the river or stream, moving towards the sea. The first flood or fresh which occurs at this period hurries them to the mouth of the river, where for a short time they remain in the tide-way, and then proceed at once to the sea. In June, not a single "smelt" or "smoult," which is the name given to the fry, is to be found in the fresh water. The characteristics of the full-grown fish are not easily discernible in the fry of different species of salmon, nor in the adult fish can a common observer distinguish one kind of salmon from another, without some knowledge of the differences occasioned by age or by the season. Mr. Yarrell's valuable work* points out the specific distinctions of each species at any age or season. Many extraordinary statements are made relative to the growth of salmon fry after reaching the sea. By the end of June many of the fry hatched a couple of months previously, weigh from 2 to 3 lbs., and somewhat later they are found of the weight of 6 lbs. Those under 2 lbs. are termed "salmon-peal," and all above this weight "grilse." During the second year the growth of the salmon is as rapid as in the first months of its existence. Sand-eels and other nutritious matter form their sustenance, while they continue in the sea, and are at once the cause of their rapid growth, and the excellence of the salmon as food. The salmon breeds during the first year, ascending rivers or streams in the autumn as already described. Notwithstanding the many enemies to which they are exposed, salmon are often taken which have attained a very large size. Pennant mentions a salmon weighing 74 lbs., and Mr. Yarrell one still heavier, the largest, it is believed, which has yet been noticed. It weighed 83 lbs., and the flesh was fine in colour, and of excellent quality. A salmon weighing 54½ lbs. has been taken with a fly in Scotland, and Sir Humphry caught one in the Tweed by this means, which weighed 42 lbs. A Thames salmon is now comparatively rare: an instance is mentioned of one weighing 21½ lbs. having been killed in 1812, with a single gut without a landing-net.

* 'History of British Fishes.'

Some other facts concerning the natural history of the salmon will be incidentally noticed in a future article.

The wood-cut at the head of this article represents "Salmon-Spearing," which mode of taking the fish will be noticed in a subsequent paper.



[The Salmon.—*Salmo salar.*]

DIET.

[Continued from No. 323.]

Butter, as we learn from Adelung, is called in German, *butter;* in the dialect of Lower Saxony, *botter;* in Dutch, *boter;* in Anglo-Saxon, *butere;* in Latin, *butyrum;* in Italian, *butiro* or *burro;* and in French, *beurre.* He thinks that the Germans have derived the word, as well as the thing itself, from their Tartar ancestors. The universality with which butter is diffused over every climate where it can be made is certainly an argument in favour of its use. We say every climate where it *can* be made, for in extremely hot countries butter vanishes into oil. Something, however, approximating to butter is found even in Hindostan, where it is called *ghee.* Butter and lard are almost of equivalent value for frying, though the professors of cookery lay down many rules as to when one is to be preferred, and when the other. Olive oil is used instead for frying by Catholics on fast-days, but though an elegant, is, in this country, an expensive substitute. There is a popular theory afloat, that butter is *bilious;* which means, we suppose, that it increases the secretion of bile to an inconvenient degree. This may probably be the case with some dyspeptics; but when used in moderation, it certainly has not this effect with the majority of mankind. The substitution of orange marmalade, though strongly recommended by certain manufacturers, would be by no means desirable, as so powerful a bitter cannot be taken with advantage in large quantities.

Some of the adages in which butter is concerned are very forcible—*e. g.*, he looks as if butter would not melt in his mouth, and yet cheese would not choke him. The Germans say of a man confounded by an accusation, "*Er besteht wie butter an der sonne*"—*i. e.*, He stands like butter in the sun. And the same frugal nation asserts, that the man who eats both butter and cheese at once with his bread ought to possess two houses.

Cheese.—Dr. Richard Pearson has given a good compendium of some of the chief points relating to cheese. "The quality of cheese varies according to the kind and quality of the milk from which it is prepared, according to the quantity of oil and whey which the coagulable matter retains (in other words, according to the different modes of separating and pressing the curds); and, lastly, according to its age. In general it is an aliment suited only to strong stomachs, and to such persons as use great and constant exercise. It is apt to occasion costiveness. In the higher orders of society it is used chiefly as a condiment.

"*Toasted cheese* is not* easily digested by weak stomachs; and for those who can be hurt by indigestion, or heated by a heavy supper, it is a very improper diet.

"The countries most celebrated for cheese are England, Holland, Switzerland, and Italy. The best English cheeses are the Cheshire, Gloucester, and Stilton; the Italian cheese in most esteem is the Parmesan. Besides the *Gruyeres* cheese, which is made in the canton of Friburg, the *green* Swiss cheese (called *Schabziger*), which is made in the canton of Glaris, is much sought after. The last-mentioned cheese owes its flavour and colour to the herb melilot (*Trifolium melilotus officinalis*, Linn.), which, after being dried, pounded, and sifted, is mixed with the curds from which the whey is previously expressed. This cheese is brought to table in a powdery state, and is generally mixed with butter before it is eaten. It is reckoned stomachic*."

Eggs are an agreeable, and, generally speaking, a wholesome food. Of course we mean fresh eggs; but it unfortunately happens that in London the immense demand for them cannot be supplied from the neighbourhood; and we fear that eggs from France, Holland, or Scotland can hardly be recommended to an invalid. The railways will partly mend this. Eggs simply boiled or poached, pancakes and omelettes are all excellent forms of this aliment. It has often been said, half in joke and half in earnest, that there are 650 ways of dressing eggs in the French kitchen, and that their cooks are daily in hopes of new discoveries. Those who have been taught to fear that every dish among our neighbours is something in masquerade, will be glad to learn that plain boiled eggs make their appearance at a French dinner-table. In a note which we have preserved of a dinner given to us by a Parisian tradesman in 1831, we find eggs put down between the soup and the bouilli. It is often a matter of importance to preserve eggs for a length of time, and the authorities seem to run in favour of doing this by boiling them for one minute.

Vegetables, i. e. the culinary vegetables, commonly eaten with meat at table, are of comparatively recent introduction in this country. In his observations on the reign of Henry VIII. (which terminated in 1547) Hume says, "It was not till the end of this reign that any salads, carrots, turnips, or other edible roots, were produced in England. The little of these vegetables that was used, was formerly imported from Holland and Flanders. Queen Catharine, when she wanted a salad, was obliged to dispatch a messenger thither on purpose."

Potatoes. This useful root has been known in England for about 250 years, but was not extensively used

* *Cullen,* 'Materia Medica,' vol. i., part i., p. 351.

* 'A practical Synopsis of the Materia Alimentaria and Materia Medica.'

till long after its introduction. Professor Burnett says "*Solanum tuberosum* is the *potato;* and although a plant of comparatively modern introduction into the old world, being a native of Peru, and unknown until some time after the discovery of America, it is now naturalized in every quarter of the globe, and has become a necessary of life in almost every civilized community. After the corns, our staple sustenance, perhaps no one plant is of more importance as an article of food than the potato. In the neighbourhood of Quito, whence the potato was first brought into Europe, it is called *papas*, which word was corrupted by the Spaniards, who originally received the plant, and made it into *potades:* but although the potato was brought to Spain in the early part of the sixteenth century, and travelled thence to Italy, it does not seem to have been known in England until 1586, on the return of Sir Walter Raleigh from Virginia, who is believed to have been the first who brought it here. He is said to have distributed a number of tubers in Ireland, where they were planted and throve exceedingly, and that they were subsequently introduced into England from the sister island*." The potato mentioned in Shakspeare is a different thing altogether.

Mr. Burnett, after observing that the *Convolvulus batatus* has long been prized as a delicate vegetable, adds, "The *batatus* is the potato of Shakspeare's time; and not only were its fleshy roots and young leaves and tender shoots then eaten as potherbs, but they were candied, and made into a variety of sweetmeats. Some of the 'kissing' comfits then in vogue are believed to have been made of this sweet potato, as well as of eryngo †." The passage alluded to, "Let the sky rain potatoes," &c., is in the 'Merry Wives of Windsor,' act v. scene v.

It is remarkable that Linnæus preferred the Jerusalem artichoke to the potato, against which he had a botanical prejudice on account of its belonging to a poisonous genus (the *Solanum.*) The potato, however, when well boiled, is very wholesome; but in the watery state, in which it too often makes its appearance, is fit for no man.

Peas are among the most delicate and most agreeable of vegetables, but must be enjoyed but sparingly by the dyspeptic. They are now to be had fresh in the market five or six months in the year, though it must be confessed that those of September and October are not equal to their predecessors in flavour.

Attempts have often been made to preserve green peas for the winter, but with little success. Dr. Kitchener mentions this subject twice in his 'Cook's Oracle,' the first time with the polite good-humour of a giver of testimonials, the second time with the air of a disappointed feeder. The contrast between the two passages of the same book is curious:—

"Mr. Appert has published his simple and unexpensive process of preserving fresh both animal and vegetable foods, from the season of produce through the season of scarcity, in their full flavour and excellence, merely by applying heat in a due degree to the several substances, after having deprived them of all contact with the external air. There is not a mistress of a family who is rich enough to lay by a stock of these articles, and not too rich to despise economy, who will not be benefited by the perusal of Mr. Appert's book, 12mo., 1812‡."

"Green Pease [Note].—These and all other fruits and vegetables, &c., by Mr. Appert's plan, it is said, may be preserved in full flavour for twelve months. (See Appert's book, 12mo., 1812.) We have eaten of several specimens of preserved pease, which looked pretty enough,—but *flavour* they had none at all §."

In Queen Elizabeth's time, peas were in general brought from Holland, which made Fuller say, they were "fit dainties for ladies, they came so far, and cost so dear."

Beans are nutritious, but, like the preceding vegetable, must be taken but sparingly by valetudinarian stomachs. Perhaps this was the reason that Pythagoras forbad their use to his disciples; but many speculations have been adventured on the subject. "Some persons affirm that he believed the bean to be the retreat of the soul after death; and there were many superstitions formerly connected with this seed, which was by some nations consecrated to the gods. Others suppose that the prohibition was founded merely on sanatory principles, and that Pythagoras, like Hippocrates, conceived that beans were unwholesome, and weakened the eyesight. Even in the present day, it has been observed that mental alienations are more frequent during the blossoming of the bean than at other seasons:—a circumstance, however, explicable from the excessive summer heats which about that season usually occur, and not attributable to the bean, although its black* flowers were supposed by the signature physicians to be a prophetic mourning for the maladies to ensue. Other commentators, however, and with more seeming probability, affirm, that when Pythagoras said, 'abstain from beans,' he merely intended to restrict his disciples from intermeddling in political affairs; for it is well known that votes were formerly given by beans: and vestiges of this practice, at least in words, remain with us to the present day †."

The meal of the kidney-bean was formerly so much liked in certain parts of Scotland, that Cullen says, the farm-servants would not take a place unless their masters agreed to give them regularly a fixed quantity of it.

Haricot beans are more used on the Continent than in England; they are a good variety, and appear to have given a well-known dish its name, though now, at least, they do not generally form a part of it.

Asparagus is said to have been introduced into this country about 1660. A pleasant story, touching its first appearance in some Scottish district, is told in the 'Library of Entertaining Knowledge.' A gentleman who had long lived in retirement sallied out into the next town one day, and saw asparagus at table for the first time in his life. Not knowing how to manage it, he ate the tough stalk, and left the tender shoot. This rather surprised his fellow-diners, but the gentleman, not liking to avow his ignorance, asserted that this was the part he preferred, and thus condemned himself for ever to eat asparagus at the wrong end. Asparagus is very wholesome as an article of diet; and a syrup made from it has been employed medicinally in France in palpitation of the heart.

Artichokes are the produce of the *Cynara scolymus*, "the parts eaten being the fleshy bases of the bracteæ, or scales of the involucrum, and the enlarged succulent common receptacle ‡."

They are a pleasant vegetable, and their juice has been lately recommended as the thousand and first remedy against rheumatism. It does not seem likely to cut a great figure in this branch of service.

Jerusalem artichokes owe their two names to two odd reasons. They are the tubers of the *Helianthus tuberosus*, a kind of sun-flower; and *Jerusalem* is a corruption of Gira sole (or Turnsole), its Italian name. Walker, in his 'Pronouncing Dictionary,' has observed upon this tendency to change hard and strange words into familiar ones; the vulgarisms of *sparrow-grass* for

* 'Outlines of Botany,' p. 996. † Ibid. p. 1006.
‡ 'Cook's Oracle,' p. 87, Fifth Edit. § Ibid. p. 183.

* "The dark spot in the centre of the bean blossom is, perhaps, the nearest approach to black that occurs in any flower."
The flower of the scarlet runner is so beautiful, that in the middle of the last century it was worn by ladies in their hair,—a privilege which it has lost by its commonness.
† Burnet's 'Outlines of Botany,' p. 662. ‡ Burnett.

asparagus, and *lambskinnet* for *lansquenet* are examples of this; to which we may add the *Belliqueux*, the name of a French ship, altered by our sailors into *belly-cooks*.

The name of *artichoke* is due to its strong resemblance in taste to real artichokes.

Oxalis crenata.—The tubers of this plant are eaten in Columbia. It was introduced into this country about four years ago; but we do not hear of it now.

Salads are almost universally popular, but are unfortunately of not very easy digestion. A great distinction, however, is to be made among the various herbs which enter into salads; cucumber being certainly the most indigestible, and lettuce probably the most digestible of the class. Lettuce seems to owe its innocence to a small quantity of narcotic matter which it contains; a quantity which in some varieties (as the *Lactuca virosa*) is so considerable, as to make the plant uneatable, or indeed poisonous. Nothing can show the popularity of salads more than that so eminent a man as Evelyn wrote a treatise expressly upon them *. He enumerates seventy-two herbs fit for this purpose.

Dr. Kitchener recommends the use of boiled salad, which would assuredly save many a supper-eater from unquiet nights and dismal dreams. His receipt is as follows:—

"Boiled salad. This is best compounded of boiled or baked onions, (if Portugal the better,) some baked beet-root, cauliflower or brocoli, and boiled celery and French beans, or any of these articles, with the common salad dressing; added to this, to give it an enticing appearance, and to give some of the crispness and freshness so pleasant in salad, a small quantity of raw endive, or lettuce and chervil, or burnet, strewed on the top †."

Evelyn, in his 'Acetaria,' makes mention of an order of nuns called *Feuillantines*, who among other mortifications endeavoured to live upon leaves of plants alone. This was carrying asceticism in eating farther even than the Trappists, as they eat rice, &c. The nuns, however, were obliged to give it up; as Evelyn says, "They were not able to go through that thin and meagre diet."

Mushrooms are among vegetable, what mussels are among animal food—very suspicious beings indeed, whose passports should be most carefully examined, before they are suffered to enter the sanctuary of the stomach. In Great Britain, however, accidents with mushrooms are not so common as on the continent; "because the epicure's catalogue of mushrooms in this country contains only three species, whose characters are too distinct to be mistaken by a person of ordinary skill; while abroad a great variety of them have found their way to the table, many of which are not only liable to be confounded with poisonous species, but are even also themselves of doubtful quality ‡." The danger attending mushrooms of the wrong sort, in other words toadstools, has been long known. Seneca calls them *voluptuous poison*, *lethal luxury*, &c. Celsus tells us that if they have been boiled in oil, or with a twig of a pear-tree, they are harmless; and also that the ill effects may be prevented by eating horseradish in vinegar and water, or in vinegar and salt §. We fear that these antidotes are worthless.

The leathery texture of mushrooms, even of the right sort, makes them very indigestible, and when to this we add the noxious principle contained in the poisonous fungi, it is no wonder that even in those who recover from their effects, the bad symptoms last for several days. Mushroom ketchup seldom does harm, in spite of the carelessness with which it is prepared. Christison says that he has seen those who were gathering mushrooms for ketchup near Edinburgh, pick up every fungus that came in their way. Such ketchup appears to be sometimes poisonous, but we do not read of its being absolutely fatal.

* Acetaria. A Discourse of Sallets, 1699.
† Cook's Oracle, p. 296. Fifth Edit.
‡ Christison on Poisons, p. 651. § Lib. v. 27. 17.

Declivity of Rivers.—A very slight declivity suffices to give the running motion to water. Three inches per mile, in a smooth, straight channel, gives a velocity of about three miles an hour. The Ganges, which gathers the waters of the Himalaya Mountains, the loftiest in the world, is, at 1800 miles from its mouth, only 800 feet above the level of the sea—that is, about twice the height of St. Paul's Church in London (or the height of Arthur's Seat near Edinburgh), and to fall these 800 feet, in its long course, the water requires more than a month. The great river, Magdalena, in South America, running for 1000 miles, between two ridges of the Andes, falls only 500 feet in all that distance. Above the commencement of the thousand miles, it is seen descending in rapids and cataracts from the mountains. The gigantic Rio de la Plata has so gentle a descent to the ocean, that in Paraguay, 1500 miles from its mouth, large ships are seen, which have sailed against the current all the way by the force of the wind alone; that is to say, on the beautifully inclined plane of the stream, have been gradually lifted by the soft wind, and even against the current, to an elevation greater than that of our loftiest spires.—*Arnott's Physics.*

Miseries of Indolence.—None so little enjoy life, and are such burdens to themselves, as those who have nothing to do—for

> "A want of occupation is not rest—
> A mind quite vacant is a mind distress'd."

Such a man is out of God's order; and opposing his obvious design in the faculties he has given him, and the condition in which he has placed him. Nothing, therefore, is promised in the Scriptures to the indolent. Take the indolent, with regard to exertion—What indecision! What delay! What reluctance! What apprehension! The slothful man says, 'there is a lion without; I shall be slain in the streets.' 'The way of the slothful man is as a hedge of thorns: but the way of the righteous is made plain.' Take him with regard to health—What sluggishness of circulation! What depression of spirits! What dulness of appetite! What enervation of frame! Take him with regard to temper and enjoyment—Who is pettish and fretful? Who feels wanton and childish cravings? Who is too soft to bear any of the hardships of life? Who broods over every little vexation and inconvenience? Who not only increases real, but conjures up imaginary evils, and gets no sympathy from any one in either? Who feels time wearisome and irksome? Who is devoured by ennui and spleen? Who oppresses others with their company, and their questions, and censorious talk? The active only have the true relish of life. He who knows not what it is to labour, knows not what it is to enjoy. Recreation is only valuable as it unbends us; the idle know nothing of it. It is exertion that renders rest delightful, and sleep sweet and undisturbed. That the happiness of life depends on the regular prosecution of some laudable purpose or lawful calling, which engages, helps, and enlivens all our powers, let those bear witness who, after spending years in active usefulness, retire to *enjoy themselves*. Prayer should be always offered up for their servants and wives, and for themselves too. They are a burden to themselves."—*Rev. W. Jay.*

SERPENT-CHARMING.

In a previous volume, (Nos. 55 and 65) we have given some account of the very curious subject of serpents being rendered harmless and tractable by the alleged use of charms. A recent Number of the 'Pictorial Bible' contains some further information of so interesting a character, that we are induced to extract the note, considering that it cannot fail to entertain the reader, and render the notices we have already given as complete as possible. The passage in the Bible to which the note is appended is in the 58th Psalm, verse 5.

"The present text furnishes the earliest existing reference to a class of persons who still practise their art in

the East. These are the serpent-charmers,—men who were believed to possess some natural endowment or acquired secret, which subjected the serpents in a very peculiar manner to their perceptions and control, rendered harmless any wounds which the animals might inflict upon their persons, and enabled them to cure those which others had received. In general these serpent-charmers were, and are, distinct tribes of men in their several countries, professing the power they claim to be an inherent and natural function. The most famous serpent-charmers of antiquity were the Psylli, a people of Cyrenaïca; and that theirs was believed to be a natural power appears from the story told by Pliny, that they were accustomed to try the legitimacy of their newborn children by exposing them to the most cruel and venomous serpents, who dared not molest or even approach them unless they were illegitimate. He thinks their power resided in some peculiar odour in their persons, which the serpent abhorred ('Nat. Hist.' lib. vii. c. 2). Lucan says the same; and the passage in which that poet speaks of them affords a complete exposition of the ancient belief concerning the charming of serpents. He chiefly describes the measures which they took to protect the Roman camp. When the encampment was marked out, they marched around it chanting their charms, the "mystic sound" of which chased the serpents far away. But not trusting entirely to this, they kept up fires, of different kinds of wood, beyond the furthest tents, the smell of which prevented the serpents from approaching. Thus the camp was protected during the night. But if any soldier, when abroad in the daytime, happened to be bitten, the Psylli exerted their powers to effect a cure. First they rubbed the wounded part around with saliva, to prevent, as they said, the poison from spreading while they assayed their arts to extract it:—

> 'Then sudden he begins the magic song,
> And rolls the numbers hasty o'er his tongue;
> Swift he runs on, nor pauses once for breath,
> To stop the progress of approaching death:
> He fears the cure might suffer by delay,
> And life be lost but for a moment's stay.
> Thus oft, though deep within the veins it lies,
> By magic numbers chased, the mischief flies:
> But if it hear too slow,—if still it stay,
> And scorn the potent charmer to obey;
> With forceful lips he fastens on the wound,
> Drains out and spits the venom to the ground.'
>
> *Pharsalia*, ix. Rowe.

"In this account we find the voice repeatedly mentioned; and it is to 'the *voice* of the charmer' that the Psalmist refers. We may suppose that, as in the passage we have quoted, the charmers used a form of words—a charm, or else chanted a song in some peculiar manner. So Eusebius, in mentioning that Palestine abounded in serpent-charmers in his time, says that they usually employed a verbal charm. This is still one of the processes of the Oriental serpent-charmers. Roberts says that the following is considered in India the most potent form of words against serpents: 'Oh! serpent, thou who art coiled in my path, get out of my way; for around thee are the mongoos, the porcupine, and the kite in his circles is ready to take thee!' The Egyptian serpent-charmers also employ vocal sounds and a form of words to draw the venomous creatures from their retreats. Mr. Lane says: 'He assumes an air of mystery, strikes the walls with a short palm stick, whistles, makes a clucking noise with his tongue, and spits upon the ground; and generally says, 'I adjure you by God, if ye be above, or if ye be below, that ye come forth: I adjure ye by the most Great Name, if ye be obedient, come forth; and if ye be disobedient, die! die! die!' ('Mod. Egyptians,' vol. ii. p. 104.) In these cases we may be sure that if any true effect were produced, it was by the sound of the voice, not by the form of words, which was doubtless addressed to other ears than those of serpents; and in the latter instance we may conclude the whistling and clucking to have been the most operative parts of the process.

"But music is also much employed by the charmers of serpents. By means of pipes, flutes, whistles (calls), or small drums, they profess to attract them from their retreats, to subdue their ferocity, and (when the serpents are tame ones, exhibited by themselves) to make them dance, and perform various motions regulated by the notes of the music. We see nothing difficult to believe in the statement that serpents may be, as some other creatures are, influenced or attracted by music, or even the voice of man, properly regulated; or that the proper regulation of the music or the voice for the designed end, may not have been discovered and rendered most effective, by men who, for successive generations, have given their sole attention to the subject. Indeed, it is perhaps capable of proof that music, even in common hands, has power over serpents. Sir William Jones believed so, although not on ocular evidence. Enumerating instances of the powerful effects of music upon animals, he says, 'A learned native of this country (India) told me that he had frequently seen the most venomous and malignant snakes leave their holes upon hearing notes from a flute, which, as he supposed, gave them peculiar delight.' ('Asiatic Researches,' vol. iii. p. 315.)

"As to their pretension of being in their own persons insensible to the poison of serpents, we have never met with any satisfactory proof of it. Those which they exhibit, and by which they often allow themselves to be bitten, are confessedly deprived of all or most of their venomous power by the extraction of their poison-fangs. But nevertheless, we know ourselves, and have read, many authenticated instances of their fearless handling of very venomous serpents in their native state: and it is therefore our impression that they possess some knack in seizing and handling such serpents, which prevents them from biting till their poison-fangs have been extracted. Their presence of mind and the possession of such a secret easily accounts for all the stories told on this point. But when they do happen to fail, and to receive a bite from the serpent, they die as others. They seem also to trust to the effect of their music in so diverting the attention of the serpents as to prevent them from attempting to exercise the fatal power they possess. In this also they sometimes fail. Roberts mentions an Indian serpent-charmer who came to a gentleman's house to exhibit his tame snakes. He was told that there was a *cobra di capello* in a cage, and asked if he could charm it. 'Oh yes!' said the charmer; and the serpent was accordingly released from its cage. The man began his incantations and charms; but the reptile fastened upon his arm, and he was dead before night.' This serpent 'would not listen to the voice of the charmer.'

"We will now briefly specify the principal forms in which the serpent-charmers exercise the powers which they claim. As the houses in some parts of the East are much infested with serpents, the most profitable part of the charmer's business is to detect their retreat and draw them forth. They certainly discover where they are without ocular evidence, and make them come forth, either in the manner already described, or by the notes of a pipe. It is often said, that the charmer introduces his tame serpents, and that they obey the accustomed call, and are exhibited in proof of the triumph of the charmer's art. This may sometimes be the case: but instances are known in which there could not have been any collusion or contrivance; and, after the severest test and scrutiny, many have been obliged to rest in the conclusion, that the charmers do really possess the physical means of discovering the presence of serpents without seeing them, and of attracting

them from their lurking places. This is Mr. Lane's conclusion, who also suspects that they discover the presence of serpents by the smell, and compares their attractive powers to those of the fowler, who by the fascination of his voice allures the bird into his net. In the 'Missionary Magazine' for March, 1837, a missionary to India (G. Gogerly) states, that some incredulous persons, after the most minute and careful precaution against artifice of any kind, sent a serpent-charmer into the garden. 'The man began playing with his pipe, and proceeding from one part of the garden to another for some minutes, stopped at a part of the wall much injured by age, and intimated that a serpent was within. He then played quicker, and his notes were louder, when almost immediately a large cobra di capello put forth his hooded head, and the man fearlessly ran to the spot, seized it by the throat, and drew it forth. He then showed the poison-fangs, and beat them out; afterwards it was taken to the room where his baskets were left, and deposited among the rest.' From the statement of the precautions used on this occasion, for which we refer to the publication, this was a very fair trial. Does not his beating out the poison-fangs explain what follows in the next verse?—'Break their teeth, O God, in their mouth.' This is usually done by the serpent-charmers, who then tame them, and use them in various exhibitions. These exhibitions are much the same everywhere. The most usual are thus described by Mr. Gogerly, in the paper above cited, which we the rather quote as it partly serves to explain our present cut: 'Taking out eight or ten different kinds, they cast them on the ground. The animals immediately make off in different directions. The *sap-wullah* (charmer) then applies his pipe to his mouth, and sends forth a few of his peculiar notes, and all the serpents stop as though enchanted; they then turn towards the musician, and approaching him within two feet, raise their heads from the ground, and bending backward and forward, keep time with the tune. When he ceases playing, they drop their heads, and remain quiet on the ground.' He adds that there is another and inferior kind of serpent-charmers, who are Bengalese of the lowest caste. They do not use the pipe, but merely beat with their fingers a small drum which is held in the hand. Sometimes these men, sitting on the ground, hold the cover of a basket with one hand, and with the other pull the tails of the serpents, and otherwise irritate them, until the animals become so infuriated that they dart forward and seize the naked arm of the *sap-wullah*, which he exposes for the purpose. They sometimes allow their arms to be bitten in this manner till they are covered with blood.

"Other serpent-charmers allow large serpents to twine around their bodies, as if merely to show their perfect tameness, and the impunity with which they are able

> 'To dally with the crested worm,
> To stroke his azure neck, or to receive
> The lambent homage of his arrowy tongue.'

Others, again, in this situation, allow themselves, when compressed in the serpent's folds, to be dreadfully wounded in many places (the poisoned fangs of course being wanted), till, when streaming with blood, tortured, swollen, and in a really dangerous condition, the coadjutor makes his appearance, and applies the pipe or whistle to his lips. The serpents listen to the music, gradually unloose their coils, and creep back to the cage from which they had been released at the commencement of the awful and cruel exhibition. Of such a display there is a very detailed account in Captain Riley's 'Narrative of the Loss of the American Brig Commerce' (New York, 1817)."

[Indian Serpent-Charmers.]

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